7. Monte Carlo

Program Name: MC.java   **Input File: mc.dat**

In computational chemistry and physics, Monte Carlo simulations are very popular. For example to derive certain properties, particles might be laid out in some random distribution, and then random movements will be considered. A particle will be moved if it does not overlap with any other particles after the attempted movement. Otherwise the movement will not occur.

You will be given a list of particle locations and attempted movements. If a movement is successful, you will move the particle, otherwise you will not. Each position is the center of a circular particle, and all particles have a diameter of length one. Movements must be tested in the order that they are given.

Input
The first line will contain two integers P (the number of particles) and M (the number of attempted movements). P lines will follow. Each line will contain two floating point numbers, X and Y, giving the initial positions of each particle. M lines will follow after that, each line containing one integer and two floating point numbers. The integer, k, is the particle to move, where 1 is the first particle whose coordinates were given. The other two numbers are dx and dy (delta x and delta y), representing the changes in the x and y coordinates respectively.

Constraints
```
0 < P < 100
0 < M < 100
-100 < X < 100
-100 < Y < 100
0 < k <= P
-10 < dx < 10
-10 < dy < 10
```

Output
For each test case, print the location of each particle, in the order they were first given, to 3 decimal places in the form "X Y".

Example Input File
```
3 3
1.4 2.3
0.8 3.2
-1.0 21.9
2 0.3 -1.0
1 1.2 2.3
3 -9.8 4.2
```

Example Output to Screen
```
2.600 4.600
0.800 3.200
-10.800 26.100
```

Explanation
The first movement (particle 2) caused an overlap, so it did not occur. The next two movements (particles 1 and 3) did not cause any overlap, so they occurred.